



Forensic Science | 4.3 Fingerprinting Lab

Purpose of Lab:

In this lab you will learn how to collect, develop, and identify fingerprints.

Materials:

Ink pad, washable markers, or pencil
White, unlined Paper
Light colored balloon (preferably white)
Chocolate milk powder and/or talcum powder
Roll of clear sticky tape (Packing tape is best)
Glass/Plastic plate or other smooth, flat item
Aluminum Foil
Super glue
Large, clean plastic container with lid (Butter or whipped cream containers work well; the container will be ruined so be sure to get permission if needed.)
Plastic spoon (NOT WHITE!)
Fingerprint card provided

NOTE: you will also need a camera to complete this lab. **Please remember to take a photograph of yourself as you complete each of the four parts of this lab.** You will be required to paste them into the table at the end of this lab assignment document.

Procedure:

Part I – Dusting for Prints

1. Rub your index finger(1st finger) against the side of your nose to make it oily.
2. Press that same finger on a sheet of glass or plastic film. A ceramic plate would work well.
3. Gently shake some talcum powder or cocoa over the area you placed your fingerprint and blow off the excess. Make sure you do not blow the talcum powder into your eyes.
4. Smooth a piece of clear tape over your print, and then slowly and carefully peel it off.
5. Stick the tape onto a dark piece of paper if you used talcum powder or a white piece of paper if you used cocoa.
6. Enter your data in Table 1.

Part II – Super Glue Fuming

1. **SAFETY PRECAUTION:** Super glue fumes are very powerful and should not be inhaled. Conduct this experiment only with your parent/guardian permission and under their supervision, in a well-ventilated area – outside would be best! Do not get the



superglue on your skin!

2. Rub your index finger (1st finger) against the side of your nose to make it oily.
3. Press your finger into the smooth surface of the non-white plastic spoon.
4. Make a small bowl out of aluminum foil.
5. Place 10 drops of superglue into the aluminum foil bowl.
6. Place the aluminum foil bowl in the bottom of the clean butter container
7. Place the spoon in the butter container (but not directly in the superglue!)
8. Put the lid on the butter container and let it sit overnight
BE SURE TO KEEP IT OUT OF REACH OF SMALL CHILDREN
9. After 24 hours, take the dish OUTSIDE; open the lid taking care not to get your face close to the dish to avoid the fumes.
10. Remove the spoon and observe the area you pressed your finger.
11. Discard the butter dish, lid, and aluminum foil
12. Enter your data in Table 2.

Part III – Fingerprint 10 Card

1. Print the Fingerprint card from the link:
2. Using the ink pad or washable marker, “ink” your fingers and thumbs (one at a time works best). Alternately, you can make a pencil “ink pad” by coloring an area on a piece of paper with the pencil. You will need to color it quite dark and you may need to re-shade the pencil area after each print is made. Next, rub your finger on the area you just colored with pencil until your finger is coated with pencil graphite. Finally, use a small piece of the clear tape to lift the print from your finger. You can then tape the print directly onto the fingerprint card.
3. ROLL your print on the print card in the appropriate place.
4. Continue until you have completed your 10 cards.
5. If you can find a “volunteer”, print another 10 card and collect their fingerprints to use as a comparison.
6. Classify your fingerprint from the 10 Card as Loop, Arch or Whorl in Table 3.
Next, try to identify the type of Loop/Arch/Whorl pattern.

Part IV – Identifying Minutiae

1. Ink your index finger again with marker or ink pad.
2. Lay the deflated balloon down so it is smooth on a hard surface.
3. Press/roll your inked finger onto the balloon.
4. Let the ink dry to avoid smudges.
5. Inflate the balloon and tie it.
6. Observe – you should now see a “super-sized” enlargement of your fingerprint
7. Identify as many minutiae points as possible using this fingerprint manual provided.
8. Enter your data in Table 4.

Data:

Table 1 (1 point)

Hand/ Finger	Type of Powder Used	Type of Print (Loop, Arch, Whorl)	Other observations
Left index	Hot Chocolate	Arch	

Table 2 (1 point)

Hand and Finger	Color of spoon	Type of print (Loop, Arch, Whorl)	Other observations (Color of print)
Left index	Red	N/A (didn't work)	N/A

Table 3 (2 points)

Finger/ Thumb	Pattern (Loop, Arch, Whorl)	Specific type of Loop/Arch/Whorl (Ex: Ulnar loop)
R thumb	Whorl	plain
R index	arch	tented
R middle	loop	Radial
R ring	loop	radial
R little	loop	radial
L thumb	loop	radial
L index	Arch	Tented
L middle	Arch	Tented
L ring	Arch	Tented
L little	Arch	Tented

Table 4 (1 point)

Hand and finger	Estimated magnification	Pattern (Loop, Arch, or Whorl)	List 5 minutiae points observed
Right index	5 times	Arch	Delta, Ridge Dot, Bridge,

Results: (3 points)

Write a paragraph (4 or more sentences) summarizing what you have learned about fingerprints and fingerprinting techniques by completing this lab.

I have learned that there are a lot of different ways to collect fingerprints. Some ways are fast. Some ways are slow. Some ways are easy. Some ways are hard. But all of them are important for forensic evidence.

Analysis and Conclusion: (2 points each)

1. Which technique produced the best fingerprint in your experience? Why do you think this is so?
The 10 card because they were the most visible
2. What other information is found on a 10 card?
Height, weight, eye color, name, address, social security number, birth date.
3. Why do you think it is necessary to "roll" the prints onto the 10 cards?
So the fingerprint will show up better
4. Why do you think the 10 card has a spot for the four fingers on each hand to be taken "simultaneously"?
So they can see what they look like together so it will be more accurate
5. What difficulties did you have when conducting this lab?
The superglue one didn't work
6. What difficulties do you think forensic investigators might have when collecting or analyzing fingerprint evidence?
It might be hard to collect the fingerprints and analyze them.
7. If fingerprint classification groups each of a person's prints into one of 1,024 different groupings, explain why fingerprints are considered to have individual characteristics and not class characteristics. What specifically makes fingerprints individual evidence? Each one is unique to a person. This is because they are formed in the womb. That means that the chances of them being the same as someone else's are very small.